Listed Waterbody: **Santa Maria and Oso Flaco Waterbodies**

Listed Condition: **Fecal Coliform**

Progress Report: **Data Collection**

This progress report describes the status of this project at the end of fiscal year 2005-2005 (FY 04-05) for the Santa Maria River and listed waterbodies (Alamo Creek, Blosser Channel, Bradley Canyon Creek, Bradley Channel, Nipomo Creek, Orcutt Soloman Creek) and Oso Flaco Creek.

Problem Definition and Data Analysis –
The California Regional Water Quality Control Board (Regional Board) is responsible for protecting water resources from pollution and nuisance that may occur as a result of waste discharges. The Regional Board determines beneficial uses (in the Water Quality Control Plan (Basin Plan) that need protection. The Regional Board adopted water quality objectives that are necessary to protect the beneficial water uses in the Basin Plan.

Santa Maria River and listed waterbodies (Alamo Creek, Blosser Channel, Bradley Canyon Creek, Bradley Channel, Nipomo Creek, Orcutt Soloman Creek) and Oso Flaco Creek fecal coliform exceed the REC-1 water quality objectives. Regional Board staff utilized water quality data collected by the Central Coast Ambient Monitoring Program (CCAMP) to determine this objective exceedance.

Santa Maria River, Alamo Creek, Orcutt Creek, and Oso Flaco Creek have designated beneficial uses in the Basin Plan. The beneficial uses cited in the Basin Plan are listed in Table 1. Staff interprets Orcutt Creek as being synonymous with Orcutt Soloman Creek.

The Basin Plan states that surface waterbodies within the region that do not have beneficial uses designated for them are assigned the beneficial uses of "municipal and domestic water supply" and "protection of both recreation and aquatic life." Staff interpreted this general statement of beneficial uses to encompass REC-1, REC-2, MUN, and WARM. Blosser Channel, Bradley Canyon Creek, Bradley Channel, Nipomo Creek, Orcutt Soloman Creek are not specifically listed in the Basin Plan and therefore are designated with those beneficial uses.

Table 1. Beneficial uses for Santa Maria River and listed waterbodies and Oso Flaco Creek.

Waterbody	Santa Maria River	Alamo Creek	Orcutt Creek	Oso Flaco Creek
Municipal and Domestic Supply (MUN).	X	X	X	X
Agricultural Supply (AGR)	X	X	X	X
Industrial Process Supply (PROC)				

Industrial Service Supply (IND)	X			
Ground Water Recharge (GWR)	X	X	X	X
Water Contact Recreation (REC-1)	X	X	X	X
Non-Contact Water Recreation (REC-2)	X	X	X	X
Wildlife Habitat (WILD)	X	X	X	X
Cold Fresh Water Habitat (COLD)	X	X	X	
Warm Fresh Water Habitat (WARM)	X	X		X
Migration of Aquatic Organisms (MIGR)	X			
Spawning, Reproduction, and/or Early Development (SPWN)		X		
Preservation of Biological Habitats of Special Significance (BIOL)				X
Rare, Threatened, or Endangered Species (RARE)	X	X	X	X
Estuarine Habitat (EST)			X	
Freshwater Replenishment (FRSH)	X		X	X
Navigation (NAV)				
Hydropower Generation (POW)				
Commercial and Sport Fishing (COMM)	X	X	X	X
Aquaculture (AQUA)				
Inland Saline Water Habitat (SAL)				
Shellfish Harvesting (SHELL)				

Staff obtained existing data and collected additional data to be used for the TMDL project definition and source analyses. Project Clean Water sponsors studies to help identify sources of pollution and develop an understanding of how those pollutants move through the environment. During FY 04-05, staff obtained bacteriological data from the County of Santa Barbara collected as part of Project Clearwater. County staff collected instream bacteria data at five locations during ten storm events between 11/8/99 and 4/20/01 in Orcutt-Solomon Creek. Samples were analyzed for *E.coli, Enterococcus*, and Total Coliform. *E.coli* results are summarized in Table 2. Raw data and specific site locations are available via the Project Clearwater website. http://www.countyofsb.org/project_cleanwater/documents.htm).

Table 2. Summary of *E.coli* levels in Orcutt-Solomon Creek

Station	No. of Samples	Min. (MPN)	Geomean. (MPN)	Max. (MPN)
OR1	6	1,014	6,941	38,730
OR2	5	74	9,453	1,046,200
OR3	4	17	1,474	72,700
OR4	6	776	8,171	92,080
OR5	6	31	1,763	155,310

Geometric mean of *E.coli* levels at stations OR1, OR2 and OR4 were higher than those found at stations OR3 and OR5. Stations OR1, OR2 and OR4 drain areas with a large rangeland component, and County staff suspect the high bacteria levels are likely coming from cattle

nearby. OR3 drains a golf course and OR5 drains an urban area (i.e. single family homes and a shopping center).

To better characterize sources of fecal coliform in the Oso Flaco and Santa Maria watersheds and develop a Source Analyses, Regional Board staff conducted additional monitoring in 2004/05. The objectives of the additional monitoring were as follows:

1) to evaluate relative bacterial contributions upstream and downstream of sources, such as the urban areas within the City of Santa Maria and irrigated agriculture;
2) to evaluate relative bacterial contributions in discharge from tile drains and in creek drainages adjacent to irrigated agriculture;
3) to determine bacterial concentrations in runoff from the Nipomo Mesa; and
4) to determine bacterial concentrations in Correlitos Creek, an unimpaired waterbody, to gain information on background or reference conditions.

Staff coordinated with other staff on the Region-wide Bacteria Source Analysis in Irrigated Agricultural Areas project. Staff developed a Study Plan consistent with SWAMP requirements.

Staff initiated indicator monitoring to differentiate urban and agricultural sources near existing CCAMP monitoring sites. Staff also sampled agricultural runoff. Staff conducted field monitoring in December 2004, February, and May 2005. Staff sampled runoff from the Nipomo Mesa to Oso Flaco Creek, and receiving water in Bradley Channel upstream and downstream of the City of Santa Maria during storm events. Of 34 samples taken, 26 exceeded the 235 MPN/100mL numeric objective for *E. coli*. Staff omitted sampling at Correlitos Creek to gain information on background levels due to sampling objectives not meeting site location.

Exceedance of the E. coli objective occurred during wet months. May sample results showed exceedance of the 235 MPN/100mL objective in 3 of 11 samples. February sampling results show 9 of 10 samples exceeding the objective. This pattern of wet whether exceedance of the objective is also being experienced in other watersheds where bacteria sampling is ongoing. Table 3 summarizes the data collected.

Table 3. Summary of Total coliform and E.coli levels.

SITE	DATE	TIME	TCOLI (MPN/100ML)	ECOLI (MPN/100ML)	TCOLI (MPN/10gr)	ECOLI (MPN/10gr)	O157:H7
OFC	5/23/2005	10:30	>2419	354			negative
BCUDS	5/23/2005	9:55	>2419	328			negative
BCUDS	5/23/2005	9:55	>2419	307			negative
OFC	5/23/2005	10:30	>2419	219			negative
BSR	5/23/2005	10:45	>2419	120			negative
BCUUS	5/23/2005	9:15	>2419	116			negative
BCUUS	5/23/2005	9:15	>2419	108			negative
BSR	5/23/2005	10:45	>2419	36			negative
BLANK	5/23/2005		>2419	0			negative

BCUUS-SED	5/23/2005	9:15			>2419	517	
OFC-SED	5/23/2005	10:30			>2419	133	
312BCUDS	2/17/2005	1505	>2419.2	>2419.2			
312NMR	2/17/2005	1600	>2419.2	>2419.2			
312NMRDS	2/17/2005	1605	>2419.2	>2419.2			
312NMRUS	2/17/2005	1610	>2419.2	>2419.2			
312BSR	2/17/2005	1620	>2419.2	>2419.2			
312BCUUS	2/17/2005	1440	>2419.2	2419.2			
312BCUUS	2/17/2005	1441	>2419.2	1986.3			
312OFC	2/17/2005	1540	>2419.2	613.1			
312BCSD2	2/17/2005	1450	>2419.2	547.5			
312BCSD1	2/17/2005	1445	>2419.2	196.8			
312NMRUS	12/28/2004	7:27	>2419.2	2,419.2			
312NMRUS	12/28/2004	7:28	>2419.2	1732.9			
312NMR	12/28/2004	7:40	>2419.2	1203.3			
312NMRds	12/28/2004	7:43	>2419.2	1046.2			
312OFC	12/28/2004	8:05	>2419.2	344.8			
312BSR	12/28/2004	7:50	>2419.2	260.2			
312NMR	12/7/04	12:00	>2419.2	>2419.2			
312NMRDS	12/7/04	12:15	>2419.2	>2419.2			
312NMR	12/7/04	12:01	>2419.2	2,419.2			
312NMRUS	12/7/04	12:40	>2419.2	1,299.7			
312NMRDS	2/11/2004	1:30	n/a	n/a			
312NMRUS	2/11/2004	1:45	n/a	n/a			
312BCSD	2/11/2004	12:00	n/a	n/a			
312NMR	2/11/2004	1:30	>2419.2	>2419.2			
312BLK	2/11/2004	n/a	<1	<1			
312BCUDS	2/11/2004	12:20	>2419.2	2419.2			
312BSR	2/11/2004	1:10	>2419.2	1986.3			
312BCUUS	2/11/2004	12:00	2419.2	1046.2			
312OFC	2/11/2004	12:55	>2419.2	157.6			

Preliminary information indicates that elevated levels are found at locations draining primarily rangeland and urbanized areas, and that these landuses contribute significant levels of bacteria via runoff during storm events. Irrigated agriculture are likely contributing to fecal coliform levels, but conclusions can not yet be drawn as to whether or not these are a significant source warranting inclusion in the TMDL (allocations, implementation plan, etc..).

The O157:H7 species of *E. coli* were found in other watersheds in the Central Coast Region. As a result, staff also sent samples to the USDA laboratory in Albany California for speciation for the O157:H7 *E. coli;* all samples were negative for O157:H7.

Staff met with the City of Santa Maria to discuss monitoring related to the County Flood Control District (per conditional 401 certification) and City of Santa Maria (per their MS4 permit) monitoring and reporting requirements and data for Hobbs Basin and Unit Two Ditch. City staff will monitor contributions upstream of the City from agricultural sources.

Source Analysis –
Staff obtained available land use/ownership/jurisdictional boundary GIS information, and obtain more reliable and complete GIS shapefiles as necessary.

Selection of Numeric Target –
The most stringent water quality objective applies to the water contact recreation beneficial use. The Basin Plan contains the following REC-1 bacteria objective:

> "Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml."

Often, available datasets do not contain five samples in a 30-day period, so the portion of the objective that is evaluated is that "no more than ten percent of total samples during any 30-day period exceed 400 /100 mL." One can note that, in instances where fewer than five samples were collected in 30 days, the "ten percent" threshold is exceeded if any one sample exceeds 400 / 100 mL.

Table 1. Numeric Targets for Santa Maria River and listed waterbodies and Oso Flaco Creek.

Fecal Coliform	
Geometric Mean	**Maximum**
200 MPN/100 mL[a]	400 MPN/100 mL[b]

[a] Based on not less than five samples for any 30-day period
[b] No more that 10% of total samples during any 30-day period

Target Linkages- not yet developed

Loads and Allocations – not yet developed

Implementation and Monitoring Plan – not yet developed

Public Outreach and Participation –

Staff coordinated with other Regional Board program staff, and lead stakeholders, to communicate project initiation, expectations, gain any additional relevant information; and answer any questions. On September 30, 2004, Staff provided an update of the TMDLs (fecal coliform and nitrate) to the Farm Water Quality Short Course. Staff also met with stakeholders on March 21, 2005 to discuss preliminary data and plans to obtain additional data.

Planned Timeline– Data collection will continue into FY 05-06. A Data Analysis Report is due in December 2005. Phase 4 is expected to begin in January 2006. At this time, the planned timeframe for Completion of the TMDL with Implementation Plan that meets State requirements is December 2008.

Questions about this project, its progress, conclusions presented in this Progress Report, or anticipated future work planned or scheduled for this project should be addressed to Katie McNeill at the Regional Board. Katie McNeill may be contacted by telephone at: (805)- 549 - 3336, or by e-mail at: kmcneill@waterboards.ca.gov.

S:\TMDLs & Watershed Assessment\TMDL and Related Projects- Region 3\Santa Maria and Oso Flaco\Fecal Coliform\3 Data Collection\SMOFFecalColiPrgrsRptFinalJune05Del.doc